

LISTING OF THE CLAIMS

Please amend the claims to read as indicated in the following list of claims:

1. (currently amended) An automatic pointing apparatus for the correct positioning of the distal locking screws of an intramedullary nail comprising a hole, the automatic pointing apparatus comprising:

means for receiving one or more images of a portion of the intramedullary nail to be fixed with the screws, the one or more images showing the hole;

means for processing the one or more images to obtain coordinates of the centre center of the hole and inclination of an axis of the hole; and

means for positioning an a surgical instrument in correspondence with the axis of said hole, and align the instrument with the said axis;

a head which includes a reference system to be viewed by an X-ray, fluoroscopic or similar apparatus, the reference system comprising one or more radiopaque bodies of known shape, dimensions and position, incorporated in the head;

guidance means, included in said head, for guiding said surgical instrument;

means for moving said head close to an end of the nail comprising the hole,

means for taking, by said X-ray, fluoroscopic or similar apparatus, simultaneous images of the end of the nail comprising the hole for the distal locking screws and of the reference system;

means for reading the images and calculating position and inclination of the axis of the hole based on shape and dimensions of the hole shown in the images;

means for reading the images and calculating relative position and inclination of the reference system, and consequently of the head, based on shape and dimensions of the reference system;

means for calculating by a suitable algorithm position and inclination of the axis of the hole relative to the reference system;

means for moving the head so as to provide the means for guiding the surgical instrument with an inclination that is the same as the inclination of the axis of the hole.

2-3. (cancelled)

4. (currently amended) The pointing apparatus as claimed in claim 2 1, wherein ~~the means for reading comprise a sensor connected via an interface to an output of the external apparatus. the X-ray, fluoroscopic or similar apparatus have an output for an analogue or digital signal which allows the images taken by the same apparatus to be displayed on a computer or other similar apparatus,~~

5. (cancelled)

6. (currently amended) The pointing apparatus as claimed in claim 3 1, wherein the ~~head with the~~ reference system is ~~separate from the terminal and the terminal is connectable to the reference system a respective support~~ via a quick release coupling ~~and is fitted with means for guiding a surgical instrument in a known position relative to at least one between the reference system and the pointing system.~~

7. (cancelled)

8. (currently amended) The pointing apparatus as claimed in claim 7 1, wherein the radiopaque elements are spheres.

9. (currently amended) The pointing apparatus as claimed in claim 7 8, wherein the ~~radiopaque elements or~~ spheres are located at vertices of polygons of known dimensions.

10. (currently amended) The pointing apparatus as claimed in claim 3 1, wherein the ~~terminal~~ head and the reference system are mounted on a support comprising a plurality of numerically controlled actuators designed to control translation of the ~~terminal~~ head and the reference system according to at least two linear directions orthogonal to one another, and to control rotation of the ~~terminal~~ head and the reference system around at least two non-parallel axes.

11. (currently amended) The pointing apparatus as claimed in claim 2 1, further comprising a sterile hood, fitted to the head, the sterile hood being designed to cover the supports of the head and any other parts coming into contact with an operating field of the pointing apparatus in the zone of an operating field.

12. (withdrawn) A pointing apparatus for the correct positioning of distal locking screws of an intramedullary nail, the pointing apparatus comprising:

a support able to be positioned proximally to an operating table;

a first moving system, mounted on the support, subject to action of numerical control means that control movement of the first moving system along a first axis;

a second moving system, mounted on the first moving system, subject to action of numerical control means that control movement of the second moving system along a second axis;

a reference and/or pointing system made of radiopaque material comprising spheres arranged not to be superimposed with images taken by an external apparatus associated with the pointing apparatus, thus facilitating correct framing of the spheres and target holes in the intramedullary nail;

means provided with a quick release coupling system for fitting to the reference and/or pointing system and suitably shaped to allow fitting of a surgical instrument guide;

means designed to receive an input image file from the external apparatus wherein images of an end of the nail with a hole for the distal locking screws and the reference are taken simultaneously;

processing means to process the images of the end of the nail with the hole and of the reference and consequently calculate coordinates and inclination of an axis of the hole relative to the reference, and to automatically calculate a length of a screw;

activation means to activate actuators of the first moving system and second moving system, to align the surgical instrument guide with the hole.

13. (withdrawn) The pointing apparatus as claimed in claim 3, wherein the external apparatus is chosen from a group consisting of an X-ray apparatus and a fluoroscopic apparatus.

14. (withdrawn) The pointing apparatus as claimed in claim 3, wherein the surgical instrument guidance means comprise a cannula.

15. (withdrawn) The pointing apparatus as claimed in claim 3, wherein the means for reading comprise a sensor connected via an interface to an output of the external apparatus.

16. (withdrawn) The pointing apparatus as claimed in claim 3, wherein the means for guiding a surgical instrument comprise a cannula.

17. (withdrawn) The pointing apparatus of claim 12, wherein the external apparatus is chosen from a group consisting of an X-ray apparatus and a fluoroscopic apparatus.

18. (new) The pointing apparatus as claimed in claim 1, further comprising means for automatically calculating the optimum length of a distal locking screw from the coordinates and inclination, relative to the reference system, of the axis of the hole for the distal locking screws.

19. (new) The pointing apparatus as claimed in claim 1, wherein the surgical instrument guidance means comprise a cannula.

20. (new) The pointing apparatus as claimed in claim 1, further comprising a terminal designed to support in said head the surgical instrument guidance means.